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ABSTRACT

Since 1994, the National Center for Education Statistics (NCES) has surveyed public schools to measure what proportion of them is connected to the Internet. In the fall of each academic year, a new nationally representative sample of approximately 1,000 public schools has been surveyed about Internet access and, since 1996, about the types of Internet connections used. In 2000, questions were also asked about access to the Internet at times outside of regular school hours and on acceptable use policies. By the fall of 2000, almost all public schools in the United States had access to the Internet: 98% were connected. In comparison, 35% of public schools had access to the Internet in 1994. The increase in Internet access over the years may have been aided by the allocation of funds through the Education rate (E-rate) program. Another key measure of Internet access in schools is the proportion of instructional rooms connected to the Internet; this percentage increased between 1999 and 2000. The ratio of students to instructional computers in public school had decreased to 5 to 1, the ratio that many experts consider a "reasonable level" for effective use. The ratio of student to instructional computers with Internet access in public schools improved from 9 to 1 in 1999 to 7 to 1 in 2000. In 1996, dial-up Internet connections were used by almost three-fourths (74%) of public schools having Internet access; by 2000, schools tended to use faster dedicated-line Internet connections. In 2000, 54% of public schools with access to the Internet reported that computers with Internet access were available to students outside of regular school hours. Almost all public schools with Internet access had acceptable use policies in 2000, and used various technologies or procedures, such as blocking or filtering software, an intranet system, honor codes for students, or teacher/staff monitoring to control student access to inappropriate material on the Internet. An appendix contains standard error tables. (AEF)

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NATIONAL CENTER FOR EDUCATION STATISTICS

Statistics in Brief May 2001

Internet Access in U.S. Public Schools and Classrooms: 1994–2000

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Since 1994, the National Center for Education Statistics (NCES) has surveyed public schools to measure what proportion of them are connected to the Internet. These annual surveys enable the U.S. Department of Education to monitor the progress made by public schools in providing access for all students and teachers to information technology in their classrooms and schools. In the fall of each academic year, a new nationally representative sample of approximately 1,000 public schools has been surveyed about Internet access and, since 1996, about the types of Internet connections used. In 2000, questions were also asked about access to the Internet at times outside of regular school hours and on "acceptable use policies."

How much progress have public schools made in connecting to the Internet?

By the fall of 2000, almost all public schools in the United States had access to the Internet: 98 percent were connected. In comparison, 35 percent of public schools had access to the Internet in 1994 (table 1). Unlike in previous years, there were virtually no differences in school access to the Internet by school characteristics (e.g., poverty level[1] and metropolitan status) in 1999 or 2000.

The increase in Internet access over the years may have been aided by the allocation of funds through the Education rate (E-rate) program. The E-rate program was established in 1996 to make services, Internet access, and internal connections available to schools and libraries at discounted rates based upon the income level of the students in their community and whether their location is urban or rural.[2] As of February 28, 2001, $5.8 billion has been committed to E-rate applicants throughout the nation.[3]

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[1]Throughout this report, poverty level is measured by the percentage of students eligible for free or reduced-price lunch.

[2]The poorest applicants receive the largest discounts (90 percent), and rural communities receive up to a 10 percent additional discount.

[3]The E-rate program funding commitment data were found at the Web site of the School and Libraries Division (SLD), Universal Service Administrative Company (http://www.sl.universalservice.org/whatsnew/).

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Table 1.—Percent of public schools with Internet access, by school characteristics: 1994–2000

School characteristic	Public schools with Internet access						
	1994	1995	1996	1997	1998	1999	2000
All public schools	35	50	65	78	89	95	98
Instructional level[1]							
Elementary	30	46	61	75	88	94	97
Secondary	49	65	77	89	94	98	[4]100
School size							
Less than 300	30	39	57	75	87	96	96
300 to 999	35	52	66	78	89	94	98
1,000 or more	58	69	80	89	95	96	99
Metropolitan status							
City	40	47	64	74	92	93	96
Urban fringe	38	59	75	78	85	96	98
Town	29	47	61	84	90	94	98
Rural	35	48	60	79	92	96	99
Percent minority enrollment[2]							
Less than 6 percent	38	52	65	84	91	95	98
6 to 20 percent	38	58	72	87	93	97	100
21 to 49 percent	38	55	65	73	91	96	98
50 percent or more	27	39	56	63	82	92	96
Percent of students eligible for free or reduced-price school lunch[3]							
Less than 35 percent	39	60	74	86	92	95	99
35 to 49 percent	36	48	59	81	93	98	99
50 to 74 percent	31	41	53	71	88	96	97
75 percent or more	20	31	53	62	79	89	94

[1]Data for combined schools are included in the totals and in analyses by other school characteristics but are not shown separately.

[2]Percent minority enrollment was not available for some cases. In 1994, this information was missing for 100 schools. In subsequent years, the missing information ranged from 46 schools (1995) to 6 (1997).

[3]The breakouts for the percentage of students eligible for free or reduced-price school lunch have been revised this year and therefore are different from the ones reported in previous Internet access reports.

[4]In this case, the estimate fell between 99.5 percent and 100 percent and therefore was rounded to 100 percent.

NOTE: All of the estimates in this report were recalculated from the raw data files using the same computational algorithms. Consequently, the estimates presented here may differ trivially (i.e., 1 percent) from previously published results.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, K–12," FRSS 51 (1994), "Survey on Advanced Telecommunications in U.S. Public Schools, K–12," FRSS 57 (1995), "Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61; "Internet Access in U.S. Public Schools, Fall 1997," FRSS 64; "Internet Access in U.S. Public Schools, Fall 1998," FRSS 69; "Internet Access in U.S. Public Schools, Fall 1999," FRSS 75; and "Internet Access in U.S. Public Schools, Fall 2000," FRSS 79.

Another key measure of Internet access in schools is the proportion of instructional rooms connected to the Internet.[4] Since 1994, when 3 percent of instructional rooms had computers with Internet access, public schools have made consistent progress in this area: in fall 2000, 77 percent of instructional rooms were connected to the Internet, up from 64 percent in 1999 (table 2). However, in 2000, as in previous years, there were differences in Internet access in instructional rooms by school characteristics. For example, in schools with the highest concentration of students in poverty (75 percent or more students eligible for free or reduced-price school lunch), a smaller percentage of instructional rooms were connected to the Internet (60 percent) than in schools with lower concentrations of poverty (77 to 82 percent of instructional rooms). A similar pattern occurred by minority enrollment. In schools with the highest minority enrollment (50 percent or more), a smaller percentage of instructional rooms had Internet access (64 percent) than in schools with lower minority enrollment (79 to 85 percent of instructional rooms). Despite these continuing differences, however, the percentage of instructional rooms with Internet access increased between 1999 and 2000 in these schools: from 38 to 60 percent in schools with the highest concentration of poverty, and from 43 to 64 percent in schools with the highest minority enrollment.

What is the ratio of students to instructional computers in public schools?

By the fall of 2000, the ratio of students to instructional computers in public schools had decreased to 5 to 1, the ratio that "many experts consider . . . a reasonable level for the effective use of computers within the schools" (President's Committee of Advisors on Science and Technology 1997, p. 14). The ratio improved from a national average of 6 to 1 in 1999 (not shown in tables).

Similarly, the ratio of students to instructional computers *with Internet access* in public schools improved from 9 to 1 in 1999 to 7 to 1 in 2000 (table 3). However, differences by school characteristics persisted. For example, the ratio of students to instructional computers with Internet access was still greater in schools with the highest concentration of students in poverty than in schools with the lowest concentration of poverty (9 to 1 compared with 6 to 1). Nonetheless, in schools with the highest concentration of poverty, the ratio of students to computers with Internet access improved from 17 to 1 in 1999 to 9 to 1 in 2000.

How are public schools connected to the Internet?

Over the years, changes have occurred in the type of network connections used by public schools and the speed at which they are connected to the Internet. In 1996, dial-up Internet connections were used by almost three-fourths (74 percent) of public schools having Internet access (Heaviside, Riggins, and Farris 1997). By 2000, schools tended to use faster dedicated-line Internet connections, such as 56Kb, T1/DS1, fractionalized T1, T3/DS3, and fractionalized T3 lines (table 4). Seventy-seven percent of the nation's public schools that were connected to the Internet used dedicated lines, 11 percent used dial-up (not continuous) connections, and 24 percent of schools used other (continuous) connection types, including ISDN, wireless connections, and cable modems.[5] There were differences by instructional level; secondary schools (86 percent) were more likely to use dedicated lines than elementary schools (74 percent).

[4]Instructional rooms include classrooms, computer and other labs, library/media centers, and any other rooms used for instructional purposes.

[5]Percentages add to more than 100 because schools may use more than one type of connection.

Table 2.—Percent of instructional rooms with Internet access in public schools, by school characteristics: 1994–2000

School characteristic	Instructional rooms with Internet access						
	1994	1995	1996	1997	1998	1999	2000
All public schools	3	8	14	27	51	64	77
Instructional level[1]							
Elementary	3	8	13	24	51	62	76
Secondary	4	8	16	32	52	67	79
School size							
Less than 300	3	9	15	27	54	71	83
300 to 999	3	8	13	28	53	64	78
1,000 or more	3	4	16	25	45	58	70
Metropolitan status							
City	4	6	12	20	47	52	66
Urban fringe	4	8	16	29	50	67	78
Town	3	8	14	34	55	72	87
Rural	3	8	14	30	57	71	85
Percent minority enrollment[2]							
Less than 6 percent	4	9	18	37	57	74	85
6 to 20 percent	4	10	18	35	59	78	83
21 to 49 percent	4	9	12	22	52	64	79
50 percent or more	2	3	5	13	37	43	64
Percent of students eligible for free or reduced-price school lunch[3]							
Less than 35 percent	3	9	17	33	57	73	82
35–49 percent	2	6	12	33	60	69	81
50–74 percent	4	6	11	20	41	61	77
75 percent or more	2	3	5	14	38	38	60

[1]Data for combined schools are included in the totals and in analyses by other school characteristics but are not shown separately.

[2]Percent minority enrollment was not available for some cases. In 1994, this information was missing for 100 schools. In subsequent years, the missing information ranged from 46 schools (1995) to 6 (1997).

[3]The breakouts for the percentage of students eligible for free or reduced-price school lunch have been revised this year and therefore are different from the ones reported in previous Internet access reports.

NOTE: All of the estimates in this report were recalculated from the raw data files using the same computational algorithms. Consequently, the estimates presented here may differ trivially (i.e., 1 percent) from previously published results.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, K–12," FRSS 51 (1994); "Survey on Advanced Telecommunications in U.S. Public Schools, K–12," FRSS 57 (1995); "Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61; "Internet Access in U.S. Public Schools, Fall 1997," FRSS 64; "Internet Access in U.S. Public Schools, Fall 1998," FRSS 69; "Internet Access in U.S. Public Schools, Fall 1999," FRSS 75, and "Internet Access in U.S. Public Schools, Fall 2000," FRSS 79.

Table 3.—Ratio of students to instructional computers with Internet access in public schools, and percent of public schools allowing students to access the Internet outside of regular school hours, by school characteristics: 1998–2000

School characteristic	Students per instructional computers with Internet access			Internet available to students outside of regular school hours: 2000
	1998	1999	2000	
All public schools	12	9	7	54
Instructional level[1]				
Elementary	14	11	8	46
Secondary	10	7	5	80
School size				
Less than 300	9	6	4	49
300 to 999	12	9	7	53
1,000 or more	13	10	7	79
Metropolitan status				
City	14	11	8	56
Urban fringe	13	9	7	58
Town	12	8	6	45
Rural	9	7	5	53
Minority enrollment[2]				
Less than 6 percent	10	7	6	46
6 to 20 percent	11	8	6	59
21 to 49 percent	12	9	7	54
50 percent or more	17	13	8	61
Students eligible for free or reduced-price school lunch[3]				
Less than 35 percent	11	8	6	58
35 to 49 percent	11	9	6	47
50 to 74 percent	16	10	7	52
75 percent or more	17	17	9	56

[1]Data for combined schools are included in the totals and in analyses by other school characteristics but are not shown separately.

[2]Percent minority enrollment was not available for 9 schools in 1998 and 2000.

[3]The breakouts for the percentage of students eligible for free or reduced-price school lunch have been revised this year and therefore are different from the ones reported in previous Internet access reports.

NOTE: All of the estimates in this report were recalculated from the raw data files using the same computational algorithms. Consequently, the estimates presented here may differ trivially (i.e., 1 percent) from previously published results.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Internet Access in U.S. Public Schools, Fall 1998," FRSS 69, "Internet Access in U.S. Public Schools, Fall 1999," FRSS 75, and "Internet Access in U.S. Public Schools, Fall 2000," FRSS 79.

To what extent are public schools making the Internet available to students outside of regular school hours in 2000?

Making the Internet accessible outside of regular school hours allows students who would not otherwise have access to the Internet to use this resource for school-related activities like homework. In 2000, 54 percent of public schools with access to the Internet reported that computers with access to the Internet were available to students outside of regular school hours (table 3). Secondary schools were more likely to make the Internet available to students outside of regular school hours than elementary schools (80 percent compared to 46 percent). Similarly, large schools (1,000 or more students) were more likely to make the Internet accessible

Table 4.—Percent of public schools with Internet access using the following types of connections, by school characteristics: 1998–2000

School characteristic	Dedicated line[1]			Dial-up connection			Other types of connection[2]		
	1998	1999	2000	1998	1999	2000	1998	1999	2000
All public schools	65	72	77	22	15	11	26	23	24
Instructional level[3]									
Elementary	62	68	74	22	16	12	29	25	25
Secondary	77	85	86	24	8	7	18	17	19
School size									
Less than 300	63	70	76	28	21	18	18	15	19
300 to 999	64	72	77	20	13	8	30	26	26
1,000 or more	79	76	82	21	11	9	24	23	24
Metropolitan status									
City	58	70	72	18	15	15	38	23	28
Urban fringe	69	71	77	21	12	7	24	27	28
Town	65	71	77	24	14	13	28	24	19
Rural	69	75	83	27	19	10	15	16	17
Percent minority enrollment[4]									
Less than 6 percent	66	72	80	24	15	12	21	21	18
6 to 20 percent	72	78	76	15	12	9	24	22	26
21 to 49 percent	67	69	79	21	15	7	28	23	22
50 percent or more	56	68	74	28	18	15	36	24	28
Percent of students eligible for free or reduced-price school lunch[5]									
Less than 35 percent	67	75	78	18	10	10	28	23	23
35 to 49 percent	72	74	75	20	13	9	27	24	26
50 to 74 percent	66	69	82	26	23	11	20	18	20
75 percent or more	53	62	71	33	22	15	28	25	28

[1]Includes 56Kb, T1/DS1, fractionalized T1, T3/DS3, and fractionalized T3 lines.

[2]Includes ISDN, wireless connections, and cable modems (generally continuous connections, similar to dedicated lines).

[3]Data for combined schools are included in the totals and in analyses by other school characteristics but are not shown separately.

[4]Percent minority enrollment was not available for 9 schools in 1998 and 2000.

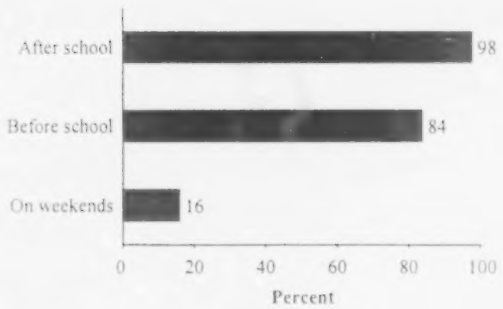
[5]The breakouts for the percentage of students eligible for free or reduced-price school lunch have been revised this year and therefore are different from the ones reported in previous Internet access reports.

NOTE: Percentages are based on the percent of public school having Internet access: 89 percent in 1998, 95 percent in 1999, and 98 percent in 2000. Percentages add to more than 100 because schools may use more than one type of connection.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Internet Access in U.S. Public Schools, Fall 1998," FRSS 69, "Internet Access in U.S. Public Schools, Fall 1999," FRSS 75, and "Internet Access in U.S. Public Schools, Fall 2000," FRSS 79.

to students outside of regular school hours than medium-sized and small schools (79 percent compared with 53 and 49 percent, respectively). In addition, schools with the highest minority enrollment reported Internet availability outside of regular school hours more frequently than schools with the lowest minority enrollment (61 percent compared with 46 percent). Of the 54 percent of schools making the Internet available to students outside of regular school hours, 98 percent made it available after school, 84 percent before school, and 16 percent on weekends (figure 1).

Figure 1.—Percent of public schools allowing students to access the Internet outside of regular school hours giving students access after school, before school, and on weekends: 2000



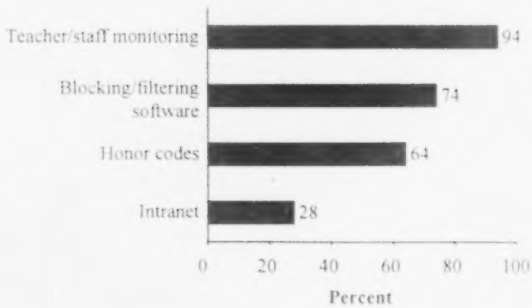
NOTE: Percentages are based on 53 percent of all public schools (98 percent with Internet access times 54 percent allowing students to access the Internet at times other than regular school hours). Percentages add to more than 100 because schools may have more than one time of availability.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Internet Access in U.S. Public Schools, Fall 2000," FRSS 79.

How are public schools preventing students from accessing inappropriate material on the Internet in 2000?

Given the diversity of the information carried on the Internet, student access to inappropriate material is a major concern of many parents and teachers. In 2000, almost all public schools with Internet access (98 percent) had "acceptable use policies" (AUPs) and used various technologies or procedures, such as blocking or filtering software, an intranet system, honor codes for students, or teacher/staff monitoring, to control student access to inappropriate material on the Internet (not shown in tables). Across all types of schools, between 95 and 100 percent had AUPs. Of those schools with AUPs, 94 percent reported having student access to the Internet monitored by teachers or other staff members (figure 2). Three-fourths (74 percent) used blocking or filtering software, 64 percent had honor codes, and 28 percent used their intranet. As these numbers suggest, most of the schools (91 percent) used more than one procedure or technology as part of their policy (calculated from table 5). Fifteen percent of public schools

Figure 2.—Percent of public schools having acceptable use policies (AUPs) using the following technologies or procedures: 2000



NOTE: Percentages are based on 96 percent of all public schools (98 percent with Internet access times 98 percent having AUPs). Percentages add to more than 100 because schools may use more than one type of AUP.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Internet Access in U.S. Public Schools, Fall 2000," FRSS 79.

used all of the procedures and technologies listed above; 29 percent used blocking/filtering software, teacher/staff monitoring, and honor codes; and 19 percent used blocking/filtering software and teacher/staff monitoring (table 5). In addition, 95 percent of public schools having AUPs used at least one of these technologies or procedures on *all* Internet-connected computers used by students (not shown in tables).

Methodology

The Fast Response Survey System (FRSS) was established in 1975 by the National Center for Education Statistics (NCES), U.S. Department of Education. FRSS is designed to collect small amounts of issue-oriented data with minimal burden on respondents and with a relatively short timeframe.

The sample of elementary and secondary schools for the FRSS survey on Internet access in public schools was selected from the 1997–1998 NCES Common Core of Data (CCD) Public School Universe File, the most up-to-date file available at the time the sample was drawn. Over 84,000 regular schools are contained in the 1997–1998 CCD Public School Universe File. For this survey, regular elementary and secondary/combined schools were selected. Special education, vocational education, and alternative schools were excluded from the sampling frame, along with schools with a highest grade below first grade and those outside the 50 states and the District of Columbia. With these exclusions, the final sampling frame consisted of about 81,400 schools, of which about 61,000 were classified as "elementary" schools and about 20,400 as "secondary/combined" schools.

A sample of 1,218 schools was selected from the public school frame. To select the sample, the frame of schools was stratified by instructional level (elementary and secondary/combined schools), enrollment size class (less than 300 students, 300 to 999, 1,000 to 1,499, and 1,500 or more), and percentage of students eligible for free or reduced-price lunch (less than 35 percent, 35 to 49 percent, 50 to 74 percent, 75 percent or more). Schools in the highest poverty category (schools with 75 percent or more students

Table 5.—Percent of public schools with acceptable use policies (AUPs) using various combinations of procedures and/or technologies to prevent student access to inappropriate material on the Internet: 2000

Combination of four procedures and/or technologies	Percent
Use all four procedures/technologies (blocking/filtering software, intranet, teacher/staff monitoring, and honor codes)	15
Use three procedures/technologies	40
Blocking/filtering software, teacher/staff monitoring, and honor codes	29
Blocking/filtering software, teacher/staff monitoring, and intranet	7
Others	4
Use two procedures/technologies	36
Blocking/filtering software and teacher/staff monitoring	19
Teacher/staff monitoring and honor codes	15
Others	2
Use one procedure or technology only	9
Teacher/staff monitoring	5
Blocking/filtering software	3
Others	1

NOTE: Percentages are based on 96 percent of all public schools (98 percent with Internet access times 98 percent having AUPs).

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Internet Access in U.S. Public Schools, Fall 2000," FRSS 79.

eligible for free or reduced-price lunch) were over sampled to permit analyses for that category.

The two-page survey instrument was designed by Westat and NCES. The questions included on the survey addressed access to Internet in public schools and classrooms, the types of Internet connections used, student access to the Internet outside of regular school hours, and acceptable use policies.

In September 2000, questionnaires were mailed to the principals of the 1,218 sampled schools. The principal was asked to forward the questionnaire to the person at the school most knowledgeable about Internet access and other advanced telecommunications offered at the school. Telephone followup of nonrespondents was initiated in early October, and data collection was completed in December. Six schools were closed, two were outside the scope of the survey, and 1,104 schools completed the survey. Thus, the final response rate was 90.6 percent (1,104 of 1,210 eligible schools). The weighted response rate was 90.7 percent. The weighted nonresponse rate for individual questionnaire items ranged from 0 to 1.3 percent; imputation for item nonresponse was not implemented.

The survey responses were weighted to produce national estimates (table A). The weights were designed to adjust for the variable probabilities of selection and differential nonresponse. The findings in this report are based on the sample selected and, consequently, are subject to sampling variability. The standard error is the measure of the variability of estimates due to sampling. It indicates the variability of a sample estimate that would be obtained from all possible samples of a given design and size. Standard errors are used as a measure of the precision expected from a particular sample. If all possible samples were surveyed under similar conditions, intervals of 1.96 standard errors below to 1.96 standard errors above a particular statistic would include the true population parameter being estimated in about 95 percent of the samples. This is a 95 percent confidence interval. For example, the estimated percentage of public schools with Internet access in 2000 is 98 percent, and the estimated standard error is 0.5 percent. The 95 percent confidence interval for the statistics extends from 98 – (0.5 times 1.96) to 98 + (0.5 times 1.96), or from 97 to 99 percent. Estimates of standard errors for this report were computed using a technique known as the jackknife replication method (standard error tables are found in the appendix). All specific statements of comparison made in this report have been tested for statistical significance using chi-square tests and t-tests adjusted for multiple comparisons using the Bonferroni adjustment and are significant at the 95 percent confidence level or better. However, not all significant differences are reported.

The survey estimates are also subject to nonsampling errors that can arise because of nonobservation (nonresponse or noncoverage) errors, errors of reporting, and errors made in collection of the data. These errors can sometimes bias the data. Nonsampling errors may include such problems as the difference in the respondents' interpretation of the meaning of the question; memory effects; misrecording of responses; incorrect editing, coding, or data entry; differences related to the particular time the survey was conducted; or errors in data preparation. While general sampling theory can be used in part to determine how to estimate the sampling variability of a statistic, nonsampling errors are not easy to measure and, for measurement purposes, usually require that an experiment be conducted as part of the data collection procedures or that data external to the study be used. To minimize the potential for nonsampling errors, the questionnaire on Internet access in public schools was pretested in 1994, and again each time it was substantially modified. The pretesting was done with public school technology coordinators and other knowledgeable respondents like those who completed the survey. No pretesting was necessary in 2000. During the design of the survey, an effort was made to check for consistency of interpretation of questions and to eliminate ambiguous items. The questionnaire and instructions were intensively reviewed by

Table A.—Number and percent of responding public schools in the study sample and estimated number and percent of public schools the sample represents, by school characteristics: 2000

School characteristic	Respondent sample		National estimate	
	Number	Percent	Number	Percent
All public schools	1,104	100	80,127	100
Instructional level				
Elementary	579	54	59,782	76
Secondary	485	46	18,414	24
School size				
Less than 300	162	15	20,067	25
300 to 999	684	62	51,887	65
1,000 or more	258	23	8,173	10
Metropolitan status				
City	332	30	21,115	26
Urban fringe	375	34	26,584	33
Town	163	15	11,879	15
Rural	234	21	20,550	26
Percent minority enrollment				
Less than 6 percent	280	26	25,083	32
6 to 20 percent	244	22	19,017	24
21 to 49 percent	214	20	15,481	19
50 percent or more	357	33	19,856	25
Percent of students eligible for free or reduced-price school lunch				
Less than 35 percent	490	44	36,563	46
35 to 49 percent	161	15	12,414	16
50 to 74 percent	205	19	17,030	21
75 percent or more	245	22	13,912	17

NOTE: Details may not add to totals because of rounding on missing data. There were very small amounts of missing data for the following variables: percent minority enrollment in school (9 cases) and percent of students eligible for free or reduced-price lunch (3 cases). Forty schools were combined schools and therefore are missing in the instructional level counts used here, but those cases were included in the totals and in analysis by other school characteristics.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Internet Access in U.S. Public Schools, Fall 2000," FRSS 79, 2000.

the National Center for Education Statistics. Manual and machine editing of the questionnaire responses were conducted to check the data for accuracy and consistency. Cases with missing or inconsistent items were recontacted by telephone to resolve problems. Data were keyed with 100 percent verification.

The survey was performed under contract with Westat, using the NCES Fast Response Survey System (FRSS). Westat's Project Director was Elizabeth Farris, and the Survey Manager was Anne Cattagni. Catrina Williams was the Survey Manager during the design phase of the survey. Bernie Greene was the NCES Project Officer.

To obtain definitions of terms for this Statistics in Brief, a copy of the questionnaire, or additional information about the Fast Response Survey System or the FRSS Internet surveys, contact Bernie Greene at NCES, 202–502–7348. To order additional copies of this Statistics in Brief or other NCES publications, call 1–800–424–1616. NCES publications are also available on the Internet *(http://www.nces.ed.gov/pubsearch)*.

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Related information

This survey is part of an overall NCES effort to track the availability and use of technology in schools. The references below contain the source information about publications for the series of public school surveys on advanced telecommunications and Internet access. In addition to collecting information from public schools, NCES surveyed private schools about advanced telecommunications in 1995 and 1999. NCES has also collected information on teachers' use of technology. A report on this topic was released in summer 2000.

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Appendix

Standard Error Tables

Table 1a.—Standard errors of the percent of public schools with Internet access, by school characteristics: 1994–2000

School characteristic	Public schools with Internet access						
	1994	1995	1996	1997	1998	1999	2000
All public schools	1.5	1.8	1.8	1.5	1.3	0.8	0.5
Instructional level							
Elementary	1.9	2.4	2.1	2.0	1.6	1.0	0.7
Secondary	2.4	2.7	1.8	1.7	2.1	0.8	0.2
School size							
Less than 300	3.4	3.9	4.4	3.8	3.4	1.5	1.7
300 to 999	2.0	2.2	2.0	2.0	1.4	1.0	0.5
1,000 or more	3.0	4.1	3.4	2.5	2.4	1.7	0.6
Metropolitan status							
City	3.1	4.3	4.5	3.8	2.1	1.5	1.1
Urban fringe	2.9	3.8	3.3	2.8	2.8	1.2	1.2
Town	2.3	3.7	4.0	4.6	3.2	2.5	1.2
Rural	2.7	3.8	3.3	3.2	3.4	1.4	0.9
Percent minority enrollment							
Less than 6 percent	2.4	3.2	3.4	2.7	2.9	1.5	1.2
6 to 20 percent	3.3	4.7	3.0	2.7	2.5	1.2	(+)
21 to 49 percent	3.2	4.1	3.2	4.1	2.5	1.8	1.2
50 percent or more	2.9	3.8	4.6	4.7	2.9	1.9	1.2
Percent of students eligible for free or reduced-price school lunch							
Less than 35 percent	2.4	2.4	2.3	1.8	2.0	1.1	0.7
35 to 49 percent	4.9	3.9	4.8	3.9	2.2	0.9	0.7
50 to 74 percent	5.0	4.6	5.1	4.0	3.0	1.7	1.3
75 percent or more	4.9	4.4	5.5	5.3	3.7	3.1	1.7

(+) Estimate of standard error is not derived because it is based on a statistic estimated at 100 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, K–12," FRSS 51 (1994); "Survey on Advanced Telecommunications in U.S. Public Schools, K–12," FRSS 57 (1995); "Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61; "Internet Access in U.S. Public Schools, Fall 1997," FRSS 64; "Internet Access in U.S. Public Schools, Fall 1998," FRSS 69; "Internet Access in U.S. Public Schools, Fall 1999," FRSS 75; and "Internet Access in U.S. Public Schools, Fall 2000," FRSS 79.

Table 2a.—Standard errors of the percent of instructional rooms with Internet access in public schools, by school characteristics: 1994–2000

School characteristic	Instructional rooms with Internet access						
	1994	1995	1996	1997	1998	1999	2000
All public schools	0.3	0.7	1.0	1.6	1.8	1.6	1.1
Instructional level							
Elementary	0.4	1.0	1.5	1.9	2.3	1.8	1.5
Secondary	0.6	1.0	1.5	1.9	2.1	2.6	1.6
School size							
Less than 300	0.7	1.6	2.9	4.3	3.7	3.2	2.8
300 to 999	0.5	1.0	1.2	2.0	2.2	1.9	1.5
1,000 or more	0.6	1.0	2.1	2.4	3.9	3.0	2.2
Metropolitan status							
City	0.8	1.3	1.6	2.2	3.2	2.6	2.2
Urban fringe	0.8	1.4	2.2	2.9	2.9	2.5	2.0
Town	0.6	2.0	1.9	3.9	4.0	3.4	2.6
Rural	0.4	1.5	2.2	3.6	3.6	3.0	1.7
Percent minority enrollment							
Less than 6 percent	0.7	1.4	2.4	3.5	2.7	2.3	1.9
6 to 20 percent	0.8	1.5	1.7	3.0	3.3	3.1	2.1
21 to 49 percent	1.0	2.1	2.5	2.8	3.7	3.1	2.3
50 percent or more	0.3	1.0	1.8	1.8	3.2	2.8	2.4
Percent of students eligible for free or reduced-price school lunch							
Less than 35 percent	0.5	1.1	1.6	2.0	2.4	2.3	1.5
35–49 percent	0.5	1.4	2.2	4.3	5.1	3.4	2.9
50–74 percent	1.9	1.9	2.8	3.7	3.9	3.1	2.8
75 percent or more	1.0	1.0	1.8	2.4	4.3	4.4	3.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Public Schools, K–12," FRSS 51 (1994), "Survey on Advanced Telecommunications in U.S. Public Schools, K–12," FRSS 57 (1995); "Advanced Telecommunications in U.S. Public Schools, Fall 1996," FRSS 61; "Internet Access in U.S. Public Schools, Fall 1997," FRSS 64; "Internet Access in U.S. Public Schools, Fall 1998," FRSS 69; "Internet Access in U.S. Public Schools, Fall 1999," FRSS 75; and "Internet Access in U.S. Public Schools, Fall 2000," FRSS 79.

Table 3a.—Standard errors of the ratio of students to instructional computers with Internet access in public schools, and percent of public schools allowing students to access the Internet outside of regular school hours, by school characteristics: 1998–2000

School characteristic	Students per instructional computers with Internet access			Internet available to students outside of regular school hours: 2000
	1998	1999	2000	
All public schools	0.6	0.3	0.1	1.9
Instructional level				
Elementary	1.0	0.4	0.2	2.6
Secondary	0.5	0.3	0.2	1.9
School size				
Less than 300	0.7	0.4	0.3	4.1
300 to 999	0.7	0.4	0.2	2.2
1,000 or more	1.1	0.6	0.3	3.2
Metropolitan status				
City	1.2	0.8	0.4	3.8
Urban fringe	1.0	0.4	0.2	2.8
Town	1.2	0.6	0.3	4.6
Rural	0.9	0.4	0.3	3.4
Minority enrollment				
Less than 6 percent	0.6	0.3	0.2	3.5
6 to 20 percent	1.1	0.5	0.2	3.8
21 to 49 percent	1.2	0.7	0.3	3.6
50 percent or more	1.7	1.1	0.4	3.2
Students eligible for free or reduced-price school lunch				
Less than 35 percent	0.6	0.3	0.2	2.8
35 to 49 percent	1.2	0.4	0.4	4.3
50 to 74 percent	1.4	0.8	0.4	4.1
75 percent or more	2.5	2.2	0.7	4.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Internet Access in U.S. Public Schools, Fall 1998," FRSS 69; "Internet Access in U.S. Public Schools, Fall 1999," FRSS 75; and "Internet Access in U.S. Public Schools, Fall 2000," FRSS 79.

Table 4a.—Standard errors of the percent of public schools with Internet access using the following types of connections by school characteristics: 1998–2000

School characteristic	Dedicated line			Dial-up connection			Other types of connection		
	1998	1999	2000	1998	1999	2000	1998	1999	2000
All public schools	1.6	1.6	1.5	1.6	1.6	1.2	1.6	1.3	1.5
Instructional level									
Elementary	2.2	2.0	2.0	2.0	2.0	1.7	2.1	1.6	1.9
Secondary	2.1	2.1	1.8	2.5	1.5	1.2	1.8	2.1	2.4
School size									
Less than 300	4.0	3.6	3.8	3.7	3.6	3.4	3.3	3.4	3.4
300 to 999	2.3	1.9	1.7	2.1	1.7	1.2	2.1	1.7	1.9
1,000 or more	3.6	3.1	3.0	3.4	2.1	2.1	3.8	3.0	3.3
Metropolitan status									
City	4.4	4.0	2.8	2.8	2.7	3.0	4.9	3.2	2.4
Urban fringe	3.3	2.8	2.8	2.4	2.1	1.6	3.3	2.6	3.0
Town	5.0	4.6	4.3	4.3	4.0	3.9	4.3	4.4	3.2
Rural	3.5	3.7	2.9	3.7	3.4	2.5	2.4	2.9	2.7
Percent minority enrollment									
Less than 6 percent	2.9	2.7	3.0	3.3	2.8	2.3	2.3	2.9	2.8
6 to 20 percent	4.1	3.5	3.5	2.9	2.9	2.6	4.0	3.5	3.8
21 to 49 percent	4.0	3.9	2.9	3.7	2.9	2.0	3.9	3.0	3.5
50 percent or more	4.7	3.5	3.1	3.6	2.9	2.6	5.1	2.9	2.9
Percent of students eligible for free or reduced-price school lunch									
Less than 35 percent	2.7	2.2	2.2	2.1	1.7	1.6	2.5	2.0	2.3
35 to 49 percent	5.3	3.8	4.5	4.0	2.7	2.9	4.3	3.6	3.8
50 to 74 percent	4.3	4.7	3.3	4.1	4.4	2.6	3.9	3.5	3.5
75 percent or more	5.7	5.1	3.5	5.4	4.5	2.8	6.0	3.9	3.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Internet Access in U.S. Public Schools, Fall 1998," FRSS 69; "Internet Access in U.S. Public Schools, Fall 1999," FRSS 75; and "Internet Access in U.S. Public Schools, Fall 2000," FRSS 79.

Table 5a.—Standard errors of the percent of public schools with acceptable use policies (AUPs) using various combinations of procedures and/or technologies to prevent student access to inappropriate material on the Internet: 2000

Combination of procedures and/or technologies	Standard error
Use all four procedures/technologies (blocking/filtering software, intranet, teacher/staff monitoring, honor codes)	1.4
Use three procedures/technologies	1.9
Blocking/filtering software, teacher/staff monitoring, and honor codes	1.8
Blocking/filtering software, teacher/staff monitoring, and intranet	1.0
Others	0.6
Use two procedures/technologies	1.9
Blocking/filtering software and teacher/staff monitoring	1.5
Teacher/staff monitoring and honor codes	1.4
Others	0.6
Use one procedure or technology only	1.1
Teacher/staff monitoring	0.8
Blocking/filtering software	0.6
Others	0.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Internet Access in U.S. Public Schools, Fall 2000," FRSS 79

Table 6a.—Standard errors for the figures and for data not shown in tables

Item	Estimate	Standard error
Figure 1: Percent of public schools allowing students to access the Internet outside of regular school hours giving students access after school, before school, and on weekends: 2000		
After school	98	0.6
Before school	84	1.7
On weekends	16	1.9
Figure 2: Percent of the public schools having acceptable use policies (AUPs) using the following technologies or procedures: 2000		
Teacher/staff monitoring	94	0.9
Blocking/filtering software	74	1.7
Honor codes	64	2.0
Intranet	28	1.9
Section: What is the ratio of students to instructional computers in public schools?		
Ratio of students to instructional computers in public schools in 1999	6	0.1
Section: How are public schools preventing students from accessing inappropriate material on the Internet in 2000?		
Of the public schools with Internet access, percent having AUPs in 2000	98	0.5
Of the public schools having AUPs, percent using at least one technology or procedure on all Internet-connected computers used by students in 2000	95	1.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Internet Access in U.S. Public Schools, Fall 1999," FRSS 75, and "Internet Access in U.S. Public Schools, Fall 2000", FRSS 79.

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